

What is claimed is:

1 1. An optical apparatus for use on an object
2 surface, comprising:

3 a frame disposed in the optical apparatus, having a
4 first compartment and a second compartment,
5 wherein the first compartment has a first
6 opening and the second compartment has a second
7 opening;

8 a light emitting device disposed in the first
9 compartment, wherein light emitted from the
10 light emitting device passes through the first
11 opening and is reflected by the object surface.

12 an optical sensor disposed in the second
13 compartment, receiving light reflected from the
14 object surface passing through the second
15 opening.

16 2. The optical apparatus as claimed in claim 1
17 further comprising a light guiding element disposed in
18 the first opening to guide light in a specific direction.

19 3. The optical apparatus as claimed in claim 1
20 further comprising a lens disposed in the second opening
21 guiding light to the optical sensor.

22 4. The optical apparatus as claimed in claim 1
23 further comprising a lens and a fixing mechanism, wherein
24 the fixing mechanism has a third opening where the lens
25 is disposed.

26 5. The optical apparatus as claimed in claim 1,
27 wherein the light emitting device is a surface mounted
28 light emitting diode (LED).

29 6. The optical apparatus as claimed in claim 1,
30 wherein the optical apparatus is an optical pointing
31 device.

32 7. An optical apparatus for an object surface,
33 comprising:

34 a frame disposed in the optical apparatus, having a
35 first compartment and a second compartment,
36 wherein the first compartment has a first and a
37 third opening and the second compartment has a
38 second opening;

39 a light emitting device disposed in the third
40 compartment, wherein light emitted from the
41 light emitting device passes through the first
42 opening and is reflected by the object surface.

43 an optical sensor disposed in the second
44 compartment, receiving light reflected from the
45 object surface passing through the second
46 opening.

47 8. The optical apparatus as claimed in claim 7
48 further comprising a light guiding element disposed in
49 the first opening to guide light in a specific direction.

50 9. The optical apparatus as claimed in claim 7
51 further comprising a lens disposed in the second opening
52 guiding light to the optical sensor.

53 10. The optical apparatus as claimed in claim 7
54 further comprising a lens and a fixing mechanism, wherein
55 the fixing mechanism has a fourth opening where the lens
56 is disposed.

57 11. The optical apparatus as claimed in claim 7,
58 wherein the light emitting device is a light emitting
59 diode (LED) .

60 12. The optical apparatus as claimed in claim 7,
61 wherein the optical apparatus is an optical pointing
62 device.